

## WE CLAIM:

1. A regenerator for a thermal cycle engine, the regenerator comprising:
  - a. a random network of fibers formed to fill a specified volume; and
  - b. a material for cross-linking the fibers at points of close contact between fibers of the network.
2. A regenerator according to claim 1, wherein the fibers are metal.
3. A regenerator according to claim 1, wherein the fibers are chosen from the group of steel and nickel wool.
4. A regenerator according to claim 1, wherein the material for cross-linking the fibers is nickel.
5. A regenerator according to claim 1, wherein the fibers are silica glass and the material for cross-linking the fibers is tetraethylorthosilicate.
6. A regenerator for a thermal cycle engine, the regenerator comprising:
  - a. a volume defined by an inner sleeve and an outer sleeve, the inner and outer sleeves being substantially concentric, and two parallel planes, each substantially perpendicular to each of the inner and outer sleeves;
  - b. a random network of fibers contained within the volume; and
  - c. a first and a second screen, each screen coupled to both the inner and outer sleeves and lying in one of the two parallel planes, such as to contain the random network of fibers within the volume.
7. A regenerator according to claim 6, wherein the fibers are chosen from the group of steel and nickel wool.
8. A regenerator for a thermal cycle engine, the regenerator comprising:
  - a. a random network of fibers formed to fill an annular volume; and
  - b. a filter disposed at at least one end of the annular volume for retaining fragments within the annular volume.
9. A regenerator according to claim 8, wherein the filter is a screen.